Complete Summary

GUIDELINE TITLE

Eye examination in infants, children, and young adults by pediatricians.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatrics. Eye examination in infants, children, and young adults by pediatricians. Pediatrics 2003 Apr;111(4 Pt 1):902-7. [8 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Ocular and vision disorders including blindness, retinal abnormalities, cataracts, glaucoma, retinoblastoma, strabismus, and neurological disorders

GUIDELINE CATEGORY

Evaluation
Prevention
Screening

CLINICAL SPECIALTY

Family Practice
Ophthalmology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Health Care Providers

Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

To provide recommendations for eye examinations in infants, children, and young adults

TARGET POPULATION

Newborns, infants, children, and young adults

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation/Screening

Eye evaluation in the physician´s office including:

Birth to 3 years of age

1. Ocular history, including parent´s observations and relevant family histories
2. Vision assessment, including
    - Ability to fix and follow objects (age 0 to 3 years)
    - Visual acuity measurement of vision screening using LH/LEA symbols and Allen cards (children 2-4); Snellen letters and numbers, tumbling E test, and the HOTV test (children older than 4)
    - Photoscreening
3. External examination of the lids, orbit, cornea, and iris
4. Ocular motility assessment
    - Corneal reflex test
    - Cross cover test
    - Random dot E stereo test
5. Examination of pupils for symmetry and light reflectivity
6. Red reflex test (monocular and binocular, Bruckner test)

Additional testing in children 3 years and older

1. Age-appropriate visual acuity measurement
2. Ophthalmoscopy

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

1. All pediatricians and other providers of health care to children should be familiar with the joint eye examination guidelines of the American Association for Pediatric Ophthalmology and Strabismus, the American Academy of Ophthalmology, and the American Academy of Pediatrics (see table below).
2. Every effort should be made to ensure that eye examinations are performed using appropriate testing conditions, instruments, and techniques.
3. Newborns should be evaluated for ocular structural abnormalities, such as cataract, corneal opacities, and ptosis, which are known to result in vision problems, and all children should have their eyes examined on a regular basis.
4. The results of vision assessments, visual acuity measurements, and eye evaluations, along with instructions for follow-up care, should be clearly communicated to parents.
5. All children who are found to have an ocular abnormality or who fail vision screening should be referred to a pediatric ophthalmologist or an eye care specialist appropriately trained to treat pediatric patients.

Table. Eye Examination Guidelines*

Ages 3-5 Years

Function: Distance visual acuity

Recommended Tests: Snellen letters; Snellen numbers; Tumbling E; HOTV; Picture tests (Allen figures, LEA symbols)

Referral Criteria: (1) Fewer than 4 of 6 correct on 20-ft line with either eye tested at 10 ft monocularly (i.e., less than 10/20 or 20/40) or (2) Two-line difference between eyes, even within the passing range (i.e., 10/12.5 and 10/20 or 20/25 and 20/40)

Comments: (1) Tests are listed in decreasing order of cognitive difficulty; the highest test that the child is capable of performing should be used; in general, the tumbling E or the HOTV test should be used for children 3-5 years of age and Snellen letters or numbers for children 6 years and older. (2) Testing distance of 10 ft is recommended for all visual acuity tests. (3) A line of figures is preferred over single figures. (4) The nontested eye should be covered by an occluder held by the examiner or by an adhesive occluder patch applied to eye; the examiner must ensure that it is not possible to peek with the nontested eye.

Function: Ocular alignment

Recommended Test: Cross cover test at 10 ft (3 m)

Referral Criteria: Any eye movement

Comments: Child must be fixing on a target while cross cover test is performed.

Recommended Test: Random dot E stereo test at 40 cm

Referral Criteria: Fewer than 4 of 6 correct

Comments: None

Recommended Test: Simultaneous red reflex test (Bruckner test)

Referral Criteria: Any asymmetry of pupil color, size, brightness

Comments: Direct ophthalmoscope used to view both red reflexes simultaneously in a darkened room from 2 to 3 feet away; detects asymmetric refractive errors as well.

Function: Ocular media clarity (cataracts, tumors, etc.)

Recommended Test: Red reflex

Referral Criteria: White pupil, dark spots, absent reflex

Comments: Direct ophthalmoscope, darkened room. View eyes separately at 12 to 18 inches; white reflex indicates possible retinoblastoma.

Ages 6 Years and Older

Function: Distance visual acuity

Recommended Tests: Snellen letters; Snellen numbers; Tumbling E; HOTV; Picture tests (Allen figures, LEA symbols)

Referral Criteria: (1) Fewer than 4 of 6 correct on 15-ft line with either eye tested at 10 ft monocularly (i.e., less than 10/15 or 20/30) or (2) Two-line difference between eyes, even within the passing range (i.e., 10/10 and 10/15 or 20/20 and 20/30)

Comments: (1) Tests are listed in decreasing order of cognitive difficulty; the highest test that the child is capable of performing should be used; in general, the tumbling E or the HOTV test should be used for children 3-5 years of age and Snellen letters or numbers for children 6 years and older. (2) Testing distance of 10 ft is recommended for all visual acuity tests. (3) A line of figures is preferred over single figures. (4) The nontested eye should be covered by an occluder held by the examiner or by an adhesive occluder patch applied to eye; the examiner must ensure that it is not possible to peek with the nontested eye.

Function: Ocular alignment

Recommended Test: Cross cover test at 10 ft (3 m)

Referral Criteria: Any eye movement

Comments: Child must be fixing on a target while cross cover test is performed.

Recommended Test: Random dot E stereo test at 40 cm

Referral Criteria: Fewer than 4 of 6 correct

Comments: None

Recommended Test: Simultaneous red reflex test (Bruckner test)

Referral Criteria: Any asymmetry of pupil color, size, brightness

Comments: Direct ophthalmoscope used to view both red reflexes simultaneously in a darkened room from 2 to 3 feet away; detects asymmetric refractive errors as well.

Function: Ocular media clarity (cataracts, tumors, etc.)

Recommended Test: Red reflex

Referral Criteria: White pupil, dark spots, absent reflex

Comments: Direct ophthalmoscope, darkened room. View eyes separately at 12 to 18 inches; white reflex indicates possible retinoblastoma.

* Assessing visual acuity (vision screening) represents one of the most sensitive techniques for the detection of eye abnormalities in children. The American Academy of Pediatrics Section on Ophthalmology, in cooperation with the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology, has developed these guidelines to be used by physicians, nurses, educational institutions, public health departments, and other professionals who perform vision evaluation services.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Early detection and prompt treatment of ocular disorders in children is important to avoid lifelong visual impairment.
- Through careful evaluation of the ocular system, retinal abnormalities, cataracts, glaucoma, retinoblastoma, strabismus, and neurological disorders can be identified, and prompt treatment of these conditions can save a child´s vision or even life.

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatrics. Eye examination in infants, children, and young adults by pediatricians. Pediatrics 2003 Apr;111(4 Pt 1):902-7. [8 references]

DATE RELEASED

2003 Apr

GUIDELINE DEVELOPER(S)

American Academy of Pediatrics - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Ophthalmology
American Academy of Pediatrics

American Association for Pediatric Ophthalmology and Strabismus (AAPOS)
American Association of Certified Orthoptists

GUIDELINE COMMITTEE

Committee on Practice and Ambulatory Medicine and Section on Ophthalmology

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American Academy of Pediatrics (AAP). Eye examination and vision screening in infants, children, and young adults.

American Academy of Pediatrics Committee on Practice and Ambulatory Medicine, Section on Ophthalmology. Pediatrics 1996 Jul;98(1):153-7.

American Academy of Pediatrics (AAP) clinical reports automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American Academy of Pediatrics (AAP) Policy Web site.

Print copies: Available from American Academy of Pediatrics, 141 Northwest Point Blvd., P.O. Box 927, Elk Grove Village, IL 60009-0927.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on August 18, 2003. The information was verified by the guideline developer on September 8, 2003.

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